1. Alignment and Adjustments

1-1 Adjustments

1-1-1 General Alignment Instructions

Usually, a color TV needs only slight touch-up adjustment upon installation. Check the basic characteristics such as vertical size, horizontal size, and focus. Observe the picture and check for good black and white details. There must be no objectionable color shading: If color shading is present, demagnetize the receiver. If color shading persists, re-do purity and convergence adjustments.

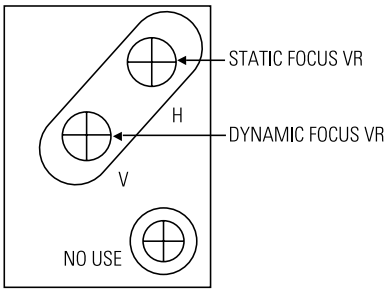
Note :

1. This '4. Alignment and Adjustments' applies to K55A chassis applications.
2. AC Power Supply: 160~300V or 100~240V, 50Hz
3. This service manual has been written on the basis of domestic remote-control model adopting K55A chassis. Depending on sales location and product specifications, some of specifications herein may be changed.

1-1-2 Focus Adjustment

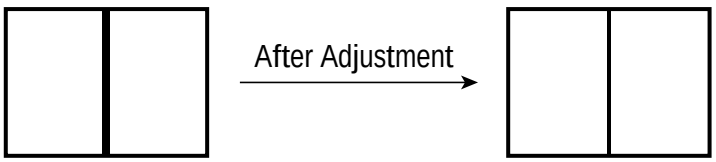
K55A contains a dynamic focus circuit. When CRT PCB, FBT or CRT is replaced, be sure to adjust in the following sequence:

Dynamic Focus Adjustment



<FBT FOCUS PACK>

1. Input a crosshatch pattern.
2. Select "Standard" from the menu,
3. Turn the Static Focus VR clockwise to set it to its maximum.
4. Turn the Dynamic Focus VR counterclockwise to set it to its maximum.
5. Turn the Static Focus VR counterclockwise slowly for the clearest center vertical line.



6. Turn the Dynamic Focus VR clockwise slowly for the clearest third line.

7. Check for the FOCUS of entire screen. If necessary, re-do adjustments 3~6.

1-1-3 Screen Voltage Adjustment

1. Input a Toshiba pattern.

2. Use an oscilloscope to identify RK, BK, GK. And then adjust FBT Screen VR so that the voltage of pedestal level doesn't exceed 160V.
   If a Toshiba pattern is not available, cancel the blue screen and input "No Signal" to AV IN so the voltage of pedestal level doesn't exceed 175V.
   If an oscilloscope is not available, use a DC multi-meter in No Signal (black screen) to adjust RK, BK, GK so that the highest voltage becomes 160Vp-p.

1-1-4 White Balance Adjustment

1. Warm up the TV set for at least 30 minutes.

2. Enter the Service Mode by pressing the remote control keys in the following sequence:
   Power Off → Display → Menu → Mute → Power On

3. Initialize all set data.

4. Input a Toshiba pattern.

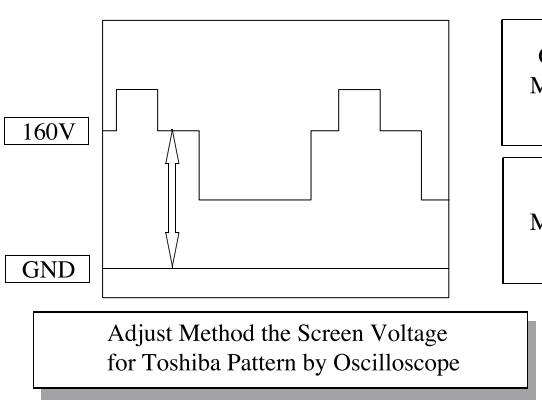
5. Using a probe(CA100), do the White Balance adjustments.

   (1) Adjust Low-Light.
   - Adjust Sub Brightness to set Y.
   - Adjust B Cutoff to set y.
   - Adjust R Cutoff to set x.

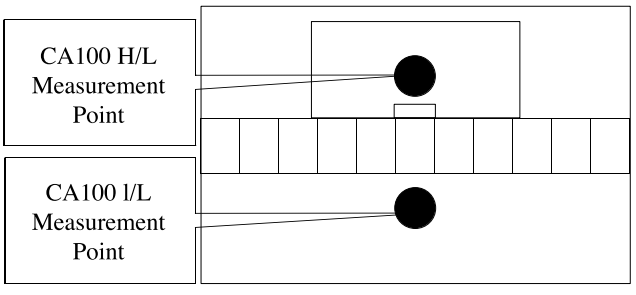
   (2) Adjust High-Light.
   - Adjust Sub Contrast to set Y.
   - Adjust B Drive to set y.
   - Adjust R Drive to set x.

   (3) Check the value of Low-Light. If necessary, readjust Low-Light.

   (4) Check the value of High-Light. If necessary, readjust High-Light.15



Adjust Method the Screen Voltage for Toshiba Pattern by Oscilloscope



Measurement Point in Toshiba Pattern

1-1-5 When adjusting Screen Voltage and White Balance

1. Screen Voltage and White Balance are related each other. Make sure both adjustments are correct.

2. Adjust Screen Voltage before White Balance Adjustments. Make sure Screen Voltage is correct.

3. If White Balance has been readjusted, re-check Screen Voltage.

4. After adjustments are complete, check the following.
   - If spots appear on the screen after pressing the Power On / Off key, readjust Screen Voltage.
   - If flyback lines appear on the screen, readjust Screen Voltage.

1-2 MICOM PORT

<table>
<tr><th>PIN</th><th>FUNCTION</th><th>FIRST STATE</th><th>ASSIGNMENT</th></tr>
<tr><td>1</td><td>W-PORT</td><td>HIGH</td><td>RESET Control jack during E²PROM latch UP(Function:Low)SERIAL H</td></tr>
<tr><td>2</td><td>ROM SDA</td><td>SERIAL H</td><td>E²PROM only SDA LINE</td></tr>
<tr><td>3</td><td>ROM SCL</td><td>SERIAL H</td><td>E²PROM only SDA LINE</td></tr>
<tr><td>4</td><td>BUS-STOP</td><td>HIGH</td><td>Automation and after-sales service related BUS STOP(STOP : LOW)</td></tr>
<tr><td>5</td><td>MAIN SDA</td><td>SERIAL H</td><td>CXA2165 /CXA2151Q/VSP940X/BA7654F/MSP34XX/TUNER Control jack</td></tr>
<tr><td>6</td><td>MAIN SCL</td><td>SERIAL H</td><td>CXA2165 /CXA2151Q/VSP940X/BA7654F/MSP34XX/TUNER Control jack</td></tr>
<tr><td>7</td><td>S-RESET</td><td>HIGH</td><td>Reset when MSP34XX IC(SOUND PROCESS IC)has an error(Active : LOW)</td></tr>
<tr><td>8</td><td>V-RESET</td><td>HIGH</td><td>Reset when VSP940X IC(1-chip IC)has an error</td></tr>
<tr><td>9</td><td>VDD 2.5V</td><td>HIGH</td><td></td></tr>
<tr><td>10</td><td>GND</td><td></td><td>Analog GND</td></tr>
<tr><td>11</td><td>VDD3.3V</td><td>HIGH</td><td></td></tr>
<tr><td>12</td><td>CVBS IN</td><td>IV p-p</td><td>TTX and USA Caption Input source line(1V p-p)</td></tr>
<tr><td>13</td><td>VDD2.5V</td><td>HIGH</td><td></td></tr>
<tr><td>14</td><td>GND</td><td></td><td></td></tr>
<tr><td>15</td><td>AFT</td><td></td><td>Main AFT Control jack(0 ~ 3.3V)</td></tr>
<tr><td>16</td><td>SC1-ID</td><td></td><td rowspan="2"><table><tr><th></th><th rowspan="2">TV MODE</th><th colspan="2">AV MODE</th></tr><tr><th>16 : 9 MODE</th><th>4 : 3 MODE</th></tr><tr><td>RANGE</td><td>0 ~ 2V</td><td>4.5 ~ 7V</td><td>9.5 ~ 12V</td></tr></table></td></tr>
<tr><td>17</td><td>SC2-ID</td><td></td></tr>
<tr><td>18</td><td>KEY-1</td><td>HIGH</td><td><table><tr><th>16 : 9 MODE</th><th>MEMU</th><th>VOL-</th><th>VOL+</th><th>CH-</th><th>CH+</th></tr><tr><td>0 ~ 2V</td><td>0~0.1V</td><td>0.1~0.7V</td><td>07~13V</td><td>1.3~1.9V</td><td>0.9~2.4V</td></tr></table></td></tr>
<tr><td>19</td><td>H-SYNC</td><td>POSITIVE</td><td>MICOM “H-SYNC” Input, POSITIVE Input(3.3V p-p)</td></tr>
<tr><td>20</td><td>V-SYNC</td><td>POSITIVE</td><td>MICOM “V-SYNC” Input, POSITIVE Input(3.3V p-p)</td></tr>
<tr><td>21</td><td>KEY-3</td><td>HIGH</td><td>OPEN</td></tr>
<tr><td>22</td><td>KEY-2</td><td>HIGH</td><td>TV/VIDEO switching control jack</td></tr>
<tr><td>23</td><td>X-RAY</td><td>HIGH</td><td>Function : LOW</td></tr>
<tr><td>24</td><td>IR-IN</td><td></td><td>Remote Control Input Jack</td></tr>
<tr><td>25</td><td>STD-LED</td><td>HIGH</td><td>STAND BY : Hight, OFF : LOW</td></tr>
<tr><td>26</td><td>TIM-LED</td><td>LOW</td><td>TIME ON : H TIME OFF : L</td></tr>
<tr><td>27</td><td>RELAY</td><td></td><td>DEGAUSSIGN COIL CONTROL:Based on standard specifications</td></tr>
<tr><td>28</td><td>SW1</td><td>HIGH</td><td>H : IN1, L : IN2(BA7657F) PIN(#16) Control jack</td></tr>
<tr><td>29</td><td>GND</td><td></td><td></td></tr>
<tr><td>30</td><td>VDD 3.3V</td><td>HIGH</td><td></td></tr>
<tr><td>33</td><td>RESET</td><td>LOW</td><td></td></tr>
<tr><td>34</td><td>X-IN</td><td></td><td>Reset active : HIGH</td></tr>
<tr><td>35</td><td>X-OUT</td><td></td><td>Crystal oscillation input jack</td></tr>
</table>

<table>
<tr><th>PIN</th><th>FUNCTION</th><th>FIRST STATE</th><th>ASSIGNMENT</th></tr>
<tr><td>36</td><td>GND</td><td></td><td></td></tr>
<tr><td>37</td><td>VDD 2.5V</td><td>HIGH</td><td></td></tr>
<tr><td>38</td><td>OSD-R</td><td>1.2V p-p</td><td>OSD R-OUT Output jack (0.38V p-p), half tone : 0.9V p-p</td></tr>
<tr><td>39</td><td>OSD-G</td><td>1.2V p-p</td><td>OSD G-OUT Output jack (0.38V p-p), half tone : 0.9V p-p</td></tr>
<tr><td>40</td><td>OSD-B</td><td>1.2V p-p</td><td>OSD B-OUT Output jack (0.38V p-p), half tone : 0.9V p-p</td></tr>
<tr><td>41</td><td>CPRE</td><td>0.9V p-p</td><td>OSD F/B-OUT Output jack (Clamped at STAND PULSE, Half Tone : LOW)</td></tr>
<tr><td>42</td><td>VDD 2.5V</td><td>HIGH</td><td></td></tr>
<tr><td>43</td><td>GND</td><td></td><td></td></tr>
<tr><td>44</td><td>VDD 3.3V</td><td>HIGH</td><td></td></tr>
<tr><td>45</td><td>PX, Y</td><td>HIGH</td><td></td></tr>
<tr><td>46</td><td>PX, Y</td><td>HIGH</td><td></td></tr>
<tr><td>47</td><td>SW3</td><td>H</td><td rowspan="2"><table><tr><th>F1</th><th>F0</th><th>fH</th></tr><tr><td>L</td><td>M</td><td>1.75KHz (480i/480P)</td></tr><tr><td>M</td><td>L</td><td>33.75KHz (1080i)</td></tr></table>LOW : GNDHIGH : OPEN STATUS
Initially, these pins select an input source at LOW state</td></tr>
<tr><td>48</td><td>SW2</td><td>L</td></tr>
<tr><td>49</td><td>S-MUTE</td><td></td><td>System (NTSC/PAL) MUST be separated</td></tr>
<tr><td>50</td><td>POWER</td><td></td><td>Active “LOW”</td></tr>
<tr><td>51</td><td>H,P-ID</td><td></td><td>1080i control jack : 1080i (LOW), RF (Hight)</td></tr>
<tr><td>52</td><td>TILT</td><td>HIGH</td><td>Magnetic field control</td></tr>
</table>

1-3 Factory Adjustment

1-3-1 Factory Adjustment values

SERVICE

Deflection
Video Adjust1
Video Adjust2
Video Adjust3
Option
YC Delay
EEPROM
Reset

1-3-2 EUROPE & CIS Factory Data

DEFLECTION : PAL

CIS W/B Angular

H/L:285/285 45(+,-5)FT L/L:285/285 1.5(+,- 0.3FT)

ITEMS	CIS			EUROPE			REMARK
	29”	32”	34"	29"	28"	32”	
V-AMP	28	25	25	28	33		Vertical AMP adj(Gain Control)
V-SHIFT	22	25	25	22	25		Vertical Position adj (DC bias adj)
H-EW	35	35	25	35	20		Horizontal AMP adj(Gain Control)
H-SHIFT	26	25	30	26	25		Horizontal Position adj (DC bias adj)
V-LIN	7	9	9	7	9		Vertical Linearity adj(TOP/Bottom adj)
UP-LIN(Fix)	9	9	9	9	9		Vertical Linearity adj(TOP adj)
LOW-LIN(Fix)	3	3	2	3	4		Vertical Linearity adj(Bottom adj)
V-SC(Fix)	4	1	3	4	3		Vertical S correction adj
H-PAR	23	20	35	23	19		Horizontal pin distortion adj
UP-COR	22	25	40	22	39		Horizontal pin distortion up adj
LOW-COR	35	30	40	35	41		Horizontal pin distortion low adj
H-TRA	40	40	25	40	27		Horizontal Trapezium distortion adj
BOW	32	32	32	32	30		Vertical line slope adj(parabola)
ANGLE	32	30	30	32	28		Vertical Linearity adj(sawtooth)
V-POSI(Fix)	40	40	40	40	40		V-POSITION ADJ as to CRT INCH

DEFLECTION : NTSC

CIS W/B Angular

H/L:285/285 50(+,-5)FT L/L:285/285 2.5(+,- 0.3FT)

ITEMS	CIS			EUROPE			REMARK
	29”	32”	34"	29"	28"	32”	
V-AMP	-2	2	2	-2	-2		Vertical AMP adj(Gain Control)
V-SHIFT	2	-2	-2	2	3		Vertical Position adj (DC bias adj)
H-EW	3	1	1	3	0		Horizontal AMP adj(Gain Control)
H-SHIFT	5	6	6	5	6		Horizontal Position adj (DC bias adj)
V-LIN	2	-4	-4	2	2		Vertical Linearity adj(TOP/Bottom adj)
UP-LIN(Fix)	1	-1	-1	1	1		Vertical Linearity adj(TOP adj)
LOW-LIN(Fix)	-1	3	3	-1	-1		Vertical Linearity adj(Bottom adj)
V-SC(Fix)	0	0	0	0	0		Vertical S correction adj
H-PAR	-1	4	1	-1	1		Horizontal pin distortion adj
UP-COR	-3	10	1	-3	2		Horizontal pin distortion up adj
LOW-COR	-2	0	-1	-2	2		Horizontal pin distortion low adj
H-TRA	-4	3	-1	-4	2		Horizontal Trapezium distortion adj
BOW	-2	0	0	-2	0		Vertical line slope adj(parabola)
ANGLE	-1	1	-1	-1	-1		Vertical Linearity adj(sawtooth)
V-POSI(Fix)	0	0	0	0	0		V-POSITION ADJ as to CRT INCH

Video Adjust 1

ITEMS	CIS			EUROPE			REMARK
	29"	32"	34"	29"	28"	32"	
R-Cutoff	32	32	32	25	25	41	R-cutoff control adj
G-Cutoff	25	25	25	25	25	32	G-cutoff control adj
B-Cutoff	32	32	32	25	25	38	B-cutoff control adj
Color on/off	1	1	1	1	1	1	Initial Value : "0"--> 1
CR offset	32	32	32	31	31	32	DC-offset canceling
CB offset	32	32	32	30	30	32	DC-offset canceling
R-Drive	32	32	32	37	37	40	R-Drive control adj
G-Drive	32	32	32	32	32	32	G-Drive control adj
B-Drive	32	32	32	32	32	38	B-Drive control adj
Sub-Bright	40	30	30	19	19	47	Sub-Bright control
Sub-Contrast	7	7	7	7	7	7	Sub-Contrast control
Sub-Color	15	15	15	15	15	15	color gain control(PAL SETTING AGAIN)
Sub-Tint	28	28	28	28	28	28	HUE control
CTI-Level	2	2	2	1	1	1	Chrominance Transient Improvement
COL AXIS	1	1	1	1	1	1	color detection axis setting(NTSC/USA)
LTI-Level	1	1	1	1	1	1	Luminance Transient Improvement
VSU	2	2	2	2	2	2	vertical osd position
Merody Volume	7	7	7	4	4	7	Volume gain control

Video Adjust 2

ITEMS	CIS			EUROPE			REMARK
	29"	32"	34"	29"	28"	32"	
ABL Mode	3	3	3	3	3	3	picture/bright ABL gain control(PAL SETTING AGAIN)
Gamma	2	2	2	2	2	2	RGB output correction control(PAL SETTING AGAIN)
DPIC Level	3	3	3	3	3	3	Dynamic picture black expansion control (PAL SETTING AGAIN)
DC Trans	3	3	3	3	3	3	Y-System DC transmission ratio(PAL SETTING AGAIN)
ABL-TH	14	15	14	14	14	14	Threshold voltage adj ABL-IN(PAL SETTING AGAIN)
VM-Level	1	1	1	1	1	1	VM-OUT Level control
VM-Coring	2	2	2	2	2	2	VM-OUT coring control
VM-f0	2	2	2	2	2	2	VM-f0 control
VM-Limit	2	2	2	2	2	2	VM-Limit level control
VM-Delay	3	3	3	3	3	3	VM-OUT phase control(reference to R-OUT)
SHP CD	1	1	1	1	1	1	Sharpness gain control(color satuation)
SHP f0	0	0	0	0	0	0	Sharpness f0 control (3Mhz)
SHP f1&p/o	8	8	8	8	8	8	Sharpness gain control(PAL SETTING AGAIN)
AKB Time	13	13	13	13	13	13	AKB Bch reference pulse time control (PAL SETTING AGAIN)
Peaking9402	88	88	88	88	88	88	VSP9402 Band/High pass filter(Peaking)

Video Adjust 3

ITEMS	CIS			EUROPE			REMARK
	29"	32"	34"	29"	28"	32"	
H comp	7	8	4	7	7	6	H-EHT compensation setting(PAL SETTING AGAIN)
V comp	4	5	4	4	4	4	V-EHT compensation setting(PAL SETTING AGAIN)
PIN comp	2	2	7	2	2	2	PIN-EHT compensation setting (PAL SETTING AGAIN)
AFC comp	0	0	0	0	0	0	AFC-EHT compensation
sync phase	0	0	0	0	0	0	WHEN USED 74HC123
NR Off Value	6	6	6	6	6	6	Not used

Option Byte(CIS Model)

ITEMS	CIS			EUROPE			REMARK
	29"	32"	34"	34"	34"	34"	
Language	CIS			NON			CIS/ARAB
SOUND	V-DOLBY			V-DOLBY			V-DOLBY/A2-NICAM
CRT	4:3	WIDE	4:3	4:3	WIDE	WIDE	4:3,WIDE
AV JACK	SCART			SCART+S			SCART(CIS,EUROPE)/RCA(ASIA,AUSTRAILIA)
AUTO FM	ON			ON			ON/OFF
TXT LANGUAGE	RUSSIAN			WEST-EUROPE			RUSSIAN/GREEK-TURKEY/ARABIC/FARSI/ ARAB-HEBREW/WEST EUROPE/EAST
LNA	ON			OFF			EUROPE
HIGH DEVIATION	OFF			NON			ON/OFF(1 TUNER)
TTX ON OFF	NON			NON			OFF/ON(INDIA)
AV BY CH KEY	OFF			OFF			OFF/ON
AGC	OFF			OFF			OFF/ON
WOOFER	OFF			OFF			OFF/ON
TTX LIST PRI	NON			NON			OFF/ON
SPEAKER	NON			DOME SPK			
TTX TOP	NON			OFF			
HELP	NON			OFF			

YC Delay

ITEMS	CIS			EUROPE			REMARK
	29"	32"	34"	29"	28"	32"	
P.YC(AV) DELAY	-9	-9	-9	-7	-7	-7	
S.YC(AV) DELAY	-13	-13	-13	-8	-8	-8	
N.YC(AV) DELAY	-8	-8	-8	-7	-7	-7	
P.BG.YC DELAY	-9	-9	-9	-7	-7	-7	
P.DK.YC DELAY	-10	-10	-10	-9	-9	-9	
P.I.YC DELAY	-11	-11	-11	-8	-8	-8	
P.M.YC DELAY	-9	-9	-9	NON	NON	NON	
P.L.YC DELAY	-9	-9	-9	-9	-9	-9	
S.BG.YC DELAY	-10	-10	-10	-7	-7	-7	
S.DK.YC DELAY	-13	-13	-13	-11	-11	-11	
S.I.YC DELAY	-10	-10	-10	-10	-10	-10	
S.M.YC DELAY	-10	-10	-10	NON	NON	NON	
S.L.YC DELAY	-10	-10	-10	-11	-11	-11	
N.M.YC DELAY	-8	-8	-8	-7	-7	-7	

EUROPE & CIS EEPROM Data

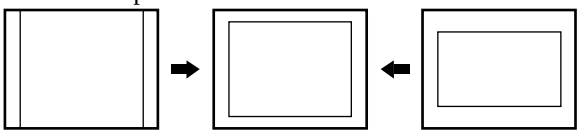
ITEMS	Range	CIS			EUROPE			REMARK
		29”	32”	34”	29”	28”	32”	
0	0~3	1	0	0	1	1	1	UP-UCG(up corner semi control)
1	0~3	1	0	0	1	1	1	LO-UCG(low corner semi control)
2	0~3	2	2	2	2	2	2	LTI Mode
3	0~3	1	1	1	1	1	1	System
4								
5								
6	0~100	70	70	70	70	70	70	Dynamic Contrast
7	0~100	50	50	50	50	50	50	Dynamic Brightness
8	0~100	40	40	40	40	40	40	Dynamic Sharpness
9	0~100	60	60	60	60	60	60	Dynamic Color
10	0~100	50	50	50	50	50	50	Dynamic ColorTone
11	0~100	50	50	50	50	50	50	Dynamic Tint
12	0~100	70	70	70	70	70	70	Standard Contrast
13	0~100	50	50	50	50	50	50	Standard Brightness
14	0~100	30	30	30	30	30	30	Standard Sharpness
15	0~100	50	50	50	50	50	50	Standard Color
16	0~100	50	50	50	50	50	50	Standard ColorTone
17	0~100	50	50	50	50	50	50	Standard Tint
18	0~100	50	50	50	50	50	50	Movie Contrast
19	0~100	50	50	50	50	50	50	Movie Brightness
20	0~100	30	30	30	30	30	30	Movie Sharpness
21	0~100	45	45	45	45	45	45	Movie Color
22	0~100	50	50	50	50	50	50	Movie ColorTone
23	0~100	50	50	50	50	50	50	Movie Tint
24								
25								
26								
27								
28								
29								
30	0~255	229	229	229	229	229	229	RGB Bright
31	0~255	171	171	171	171	171	171	RGB Contrast
32	0~255	101	101	101	101	101	101	RGB U

ITEMS	Range	CIS			EUROPE			REMARK
		29”	32”	34”	29”	28”	32”	
33	0~255	36	36	36	36	36	36	RGB V
34	0~255	32	32	32	32	32	32	RGB R Gain
35	0~255	32	32	32	32	32	32	RGB G Gain
36	0~255	32	32	32	32	32	32	RGB B Gain
37	0~255	23	23	23	23	23	23	RGB F/B Gain
38	0~255	168	168	168	168	168	168	Y Gain Adjustment
39	0~255	71	71	71	71	71	71	U Gain Adjustment
40	0~255	65	65	65	65	65	65	V Gain Adjustment
41	0~255	2	2	2	2	2	2	Vertical Slicing Level Adjustment
42	0~255	13	13	13	13	13	13	Vertical Slicing Level Adjustment
43	0~255							
44	0~255							
45	0~255	0	0	0	0	0	0	TTX Sub Brightness value
46	0~255	147	147	147	147	147	147	Left Blanking
47	0~255	153	153	153	153	153	153	Right Blanking
48	0~3	0	0	0	0	0	0	S-ABL
49	0~255	48	48	48	48	48	48	P-ABL
50	0~255	52	52	52	52	52	52	DCTI
51	0~255	136	136	136	136	136	136	Peaking value
52	0~255	200	200	200	200	200	200	PAL sensitive
53	0~255	28	28	28	28	28	28	SECAM sensitive
54	0~3	3	3	3	3	3	3	Picture Limit Level
55	0~15	12	12	12	7	7	7	OSD Bright adjustment(LRGB2_LEV)
56	0~15	5	5	5	5	5	5	TTX Bright adjustment(LRGB2_LEV)
57	0~255							
58	0~255							
59	0~255							
60	0~255							
61	0~3							
62	0~3							
63	0~255							
64	0~255							
65	0~3							

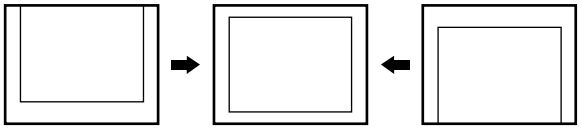
ITEMS	Range	CIS			EUROPE			REMARK
		29”	32”	34”	29”	28”	32”	
66	0~3							
67	0~255	39	39	39	39	39	38	TTX V Position
68	0~255	186	186	186	186	186	190	TTX H Position
69	0~255							
70	0~255							
71	0~255	0	0	0	0	0	0	Wide model 4:3 mode H-PAR offset
72	0~255	85	85	85	85	85	85	VSP9402 NR-ON
73	0~255	85	85	85	85	85	85	
74	0~255	170	170	170	170	170	170	
75	0~255	170	170	170	170	170	170	
76	0~255	68	68	68	68	68	68	VSP9402 NR-OFF
77	0~255	68	68	68	68	68	68	
78	0~255	34	34	34	34	34	34	
79	0~255	34	34	34	34	34	34	
80	0~255	215	215	215	215	215	215	

1-4 Screen Change(I^2C Bus Geometric Adjustment)

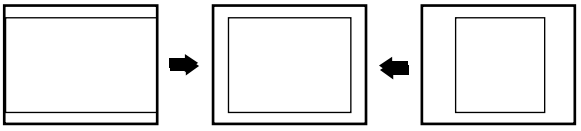
0 V - Amp



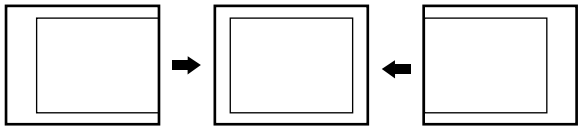
1 V-Shift



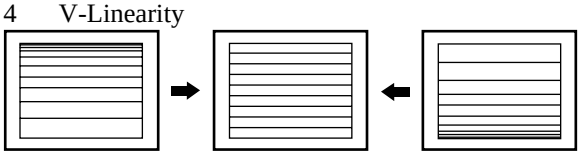
2 H-EW



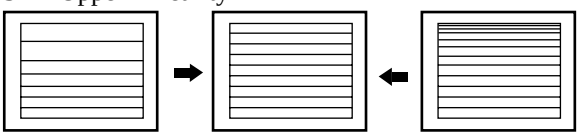
3 H-Shift



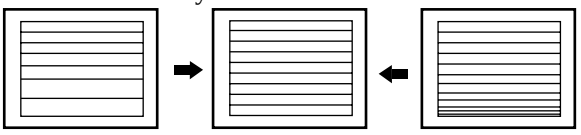
4 V-Linearity



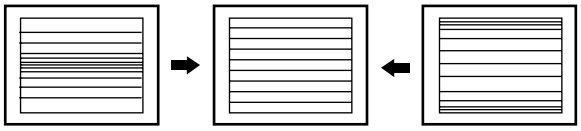
5 Upper Linearity



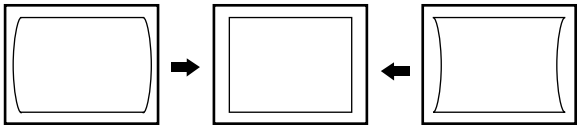
6 Low Linearity



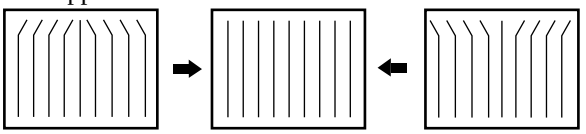
7 V SC



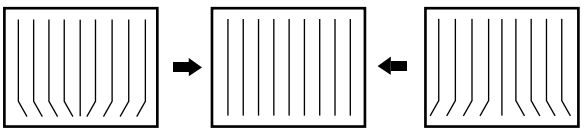
8 H-Parabola



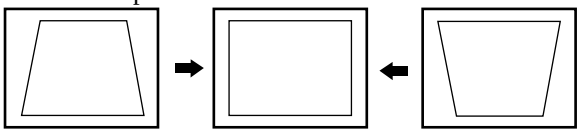
9 Upper Coner



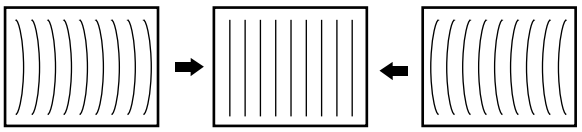
10 Low Coner



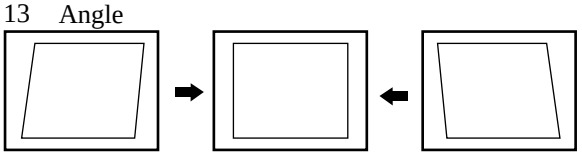
11 H- Trapezuim



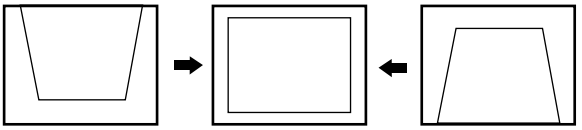
12 Bow



13 Angle



14 V Position



MEMO